EVOLUTION OF SKIN TEMPERATURE AFTER AEROBIC EXERCISE

Fernández-Cuevas, I[1], Sillero Quintana, M[1], García-Concepción, MA[1], Gómez Carmona, P[1], Marins, J[2]

1 Faculty of Physical Activity and Sport Sciences - INEF, Universidad Politécnica de Madrid (Spain)

2 Human Performance Laboratory – LAPEH, Universidade Federal de Viçosa (Brazil)

INTRODUCTION

Thermal response of skin temperature (Tsk) has been studied during exercise and immediately after (Merla, 2010). However, more studies about the influence of exercise on Tsk through the time are required to understand the impact of physical activity on thermoregulatory system and metabolism.

OBJECTIVE

- To evaluate the thermal response of skin temperature during and after aerobic exercise

METHODS

15 physically active males (age: 22±3,34 yr; height: 178± 0,04 cm; weight: 73,03±7,3 Kg) performed 45' of running on treadmill at a moderate intensity (60-75% MHR).

Tsk were recorded before the exercise, immediately after, and 1, 2, 4 and 8 hours after the exercise by infrared camera (FLIR T335, Sweden) in a controlled room (Tª: 20,64±0,7ºC), following the patterns set by Gómez Carmona et al. (2010). Tsk from Region of Interest (ROI) were obtained using Termotracker® software. Multivariate analyses of repeated measures and Fisher's least significant difference post-hoc tests were carried out to find significant differences through the time.

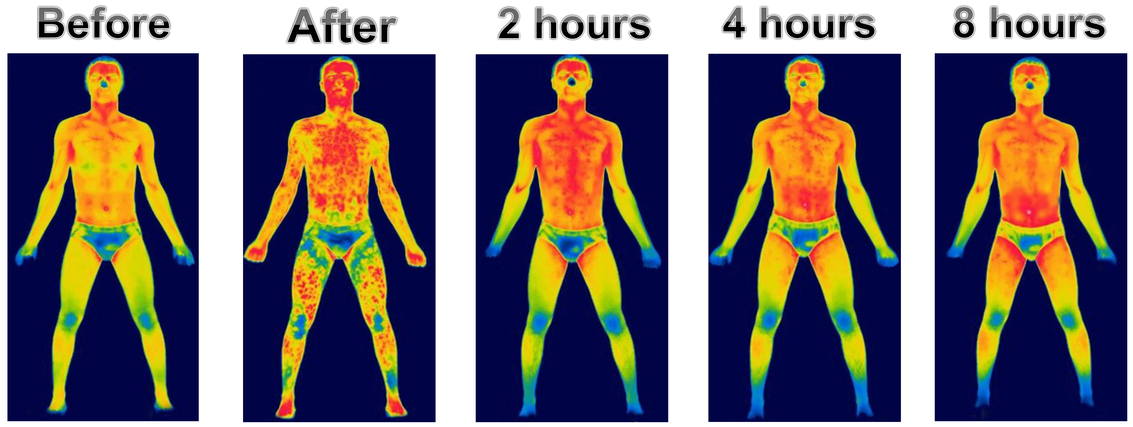

Figure 1. IRT images before performing 45' running on a treadmill, inmediately after, 2, 4 and 8 hours after.

RESULTS

The effects of the resistance training were different according to the body area (chart 1):

In the **upper limb**, there were not found significant differences (p=0.08). Tsk remained almost constant.

In the **lower limb**, the averaged values increased significantly (p<0,05) immediately after the exercise (from 30.1±0.9ºC to 31.1±0.9ºC), with similar values after one hour and then progressively decreasing them until steady-state values 8 hours after.

The **abdominal area** significantly (p<0,05) reduced its initial Tsk after the exercise (from 32.7±1.04ºC to 31.4±1.7ºC), but one hour after Tsk reacted increasing significantly (p<0,05) (to 33.4±0.8ºC), keeping significantly higher values (p<0,05) even 8 hours after the trial (33.8±0.7ºC).

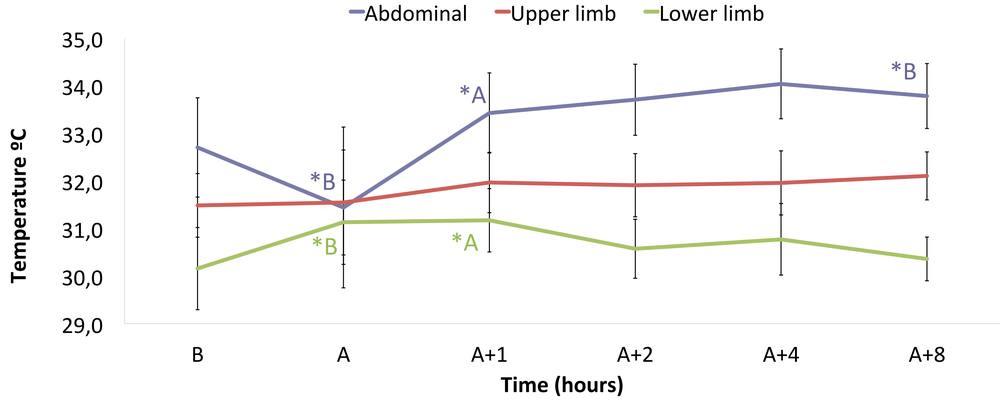

Chart 1. Thermal evolution of abdominal, upper and lower limb (* p<0.05).

DISCUSSION

Ring (2000) suggested that the influence of exercise on skin temperature remains up to 6 hours after exercise. However our results show that after 8 hours, skin temperature is still affected by exercise. Knab (2011) describes that metabolism is affected by exercise up to 14 hours after. Our results suggest that skin temperature could be also a metabolic indicator. Further investigation is required on that hypothesis.

REFERENCES

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mail: ismael.fernandez@upm.es